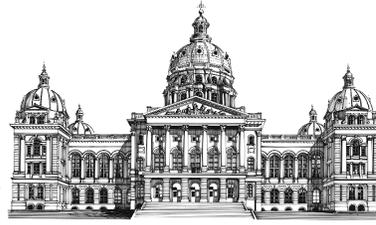

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Plant Science Initiative at Iowa State University

ISSUE

This *Issue Review* provides information about Iowa State University's multi-year request for funding to establish a Plant Sciences Institute.

AFFECTED AGENCIES

Iowa State University (ISU)

BACKGROUND

The goal of the plant science initiative as proposed by Iowa State University is to establish ISU as a world leader in plant sciences programs. The objectives of the initiative as envisioned by ISU include:

- Attracting experts in the field of plant science and competing with other institutions for the top scientists and grant funds.
- Assisting the State in becoming a world leader in the use of biotechnology to enhance the value of crops and to supply value-added plant materials to new and expanding markets.
- Establishing ISU and Iowa as the leading site to:
 - Develop the fundamental plant sciences
 - Use new scientific knowledge for improved crop production
 - Increase commercialization of plants and plant materials
- Serving Iowans with improved profitability for Iowa producers and increased economic development.
- Benefiting biotechnology/seed companies and the grain processing industry with scientific advances by preparing high quality prospective employees.

Iowa State University recently received approval from the Board of Regents to formalize the plant science initiative by establishing a Plant Sciences Institute.

The Institute is expected to create an environment that fosters multidisciplinary collaboration in the fundamental and applied plant sciences. Several ISU departments, primarily the

Colleges of Agriculture, Engineering, and Liberal Arts and Sciences, will be involved. The Institute is to serve as an umbrella organization for several centers focused in specific areas of the plant sciences. The six identified centers include:

- Bioinformatics and Biological Statistics
- Designer Crops
- Plant Responses to Environmental Stresses
- Plant Breeding
- Plant Genomics - Genomics is the study of the genetic makeup of an organism
- Plant Transformation and Gene Expression

FUNDING

The initial State investment in ISU's plant science initiative was an FY 1999 General Fund appropriation of \$200,000 for bioinformatics (the merging of information and biotechnologies). This investment was considered seed money for the plant science initiative and was used by ISU to recruit two faculty members in the area of bioinformatics. The initial funds were also leveraged to secure a \$2.5 million National Science Foundation grant for bioinformatics and a matching grant of \$500,000 from Pioneer Hi-Bred International, Inc.

Table 1 below illustrates the history of funding for the ISU plant science initiative.

Table 1
Iowa State University – Plant Science Initiative Funding History
(Dollars in Millions)

	<u>ISU Request</u>	<u>Board of Regents Recomm.</u>	<u>Governor's Recomm.</u>	<u>Legislative Appropriation</u>
FY 1999				
Center for Plant Science Excellence*	\$ 2.5	\$ 0.8	\$ 0.0	\$ 0.2
FY 2000				
Center for Plant Science Excellence	5.0	3.0	2.0	2.0
FY 2001 (preliminary)	5.0	5.0	NA	NA

*As an alternative to the request for funding the Center, the General Assembly appropriated \$200,000 for bioinformatics.

Iowa State University is anticipating receipt of total on-going State funding of \$10.0 million. The majority of the funds will be invested in recruiting new faculty members. **Table 2** below illustrates how ISU has or expects to expend General Fund appropriations.

Table 2
Plant Science Initiative Actual/Planned Incremental Expenditures

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Totals</u>
New Faculty Members	2	6	8	7	23
Salaries/Benefits	\$ 134,495	\$ 710,000	\$ 770,000	\$ 660,000	\$ 2,274,495
Start-up	19,288	267,000	536,000	429,000	1,251,288
Support Staff & Supplies		43,000	1,164,000	666,000	1,873,000
Renovation		640,000	1,730,000	352,000	2,722,000
Equipment	46,217	320,000	800,000	693,000	1,859,217
Seminars		20,000			20,000
Totals	<u>\$ 200,000</u>	<u>\$ 2,000,000</u>	<u>\$ 5,000,000</u>	<u>\$ 2,800,000</u>	<u>\$ 10,000,000</u>

In addition to State funds, ISU plans to leverage private and federal funds. Iowa State recently announced a private gift of \$80.0 million that will be used as an endowment to support the plant science initiative.

Federal funds received to date include:

- \$4.2 million in grant funding from the National Science Foundation for a corn genomics program.
- \$2.5 million (mentioned above) from the National Science Foundation Integrative Graduate Education and Research Training Project for bioinformatics. This grant received a matching grant of \$500,000 from Pioneer Hi-Bred International, Inc.
- \$2.8 million in the form of a cooperative agreement with the National Aeronautics and Space Administration (NASA) to help develop foods and food processing technologies that enhance space mission and advance commercial food products. Additional private funding commitment of \$1.0 million from food industry companies will also be used to address emerging food needs.

OTHER STATE INITIATIVES

Several other states have participated in similar plant science research initiatives or have invested in university plant science programs. However, most of the initiatives in other states have been funded by private companies rather than tax dollars. The two most well-known and most recent initiatives are located in Missouri and California.

In July 1998, the Governor of Missouri announced the establishment of a multi-million-dollar plant science research center. Touted as an economic development tool, the center's focus is the production of new varieties of crops that are pest and disease resistant and contain a higher nutritional content. The center, the non-profit Donald Danforth Plant Science Center in St. Louis, combines the resources of the following plant research organizations: the Missouri Botanical Gardens, the University of Missouri-Columbia School of Agriculture, the Monsanto Company, the University of Illinois, and Washington University. The Center is being built on a 40-acre tract of land donated by Monsanto. The State of Missouri, through the Missouri Development Finance Board, approved \$25.0 million in tax credits to help initiate the project. The tax credits are expected to leverage \$50.0 million in private contributions. The Monsanto Fund contributed \$40.0 million and pledged an additional \$30.0 million over four years. In addition, the Danforth Foundation has committed \$60.0 million for the project. It is anticipated that the Center will also be supported by

operating appropriations to the University of Missouri and through a newly created seed capital entity.

In November 1998, the Novartis company announced a commitment of \$25.0 million to the Department of Plant and Microbial Biology in the College of Natural Resources at the University of California at Berkeley. Novartis is a Swiss-based life sciences company with interests in California and is considered a world leader in biotechnology research. In early 1998, the Novartis Research Foundation announced a \$600.0 million investment worldwide over the next 10 years in plant genomics. The investment included creation of the Novartis Agricultural Discovery Institute in San Diego and the cooperative agreement with the University of California at Berkeley.

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